FUTV4207A Multiplexer

User's Manual

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SNMP Version: 2.2.5

Software: 1.23

Hardware: 1.7

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Chapter 1 Product Outline

1.1 Outline

FUTV4207A Two channels IP output multiplexer is an enhanced TS re-multiplexer for digital TV broadcasting head-end system. The multiplexer has all the functions of normal TS multiplexer, including programs multiplexing, PSI/SI editing, PID re-mapping, service filtering etc. The multiplexer can insert EPG (Electronic Program Guide), CA (Conditional Access) and data casting information into each output stream. Different from normal multiplexer, this multiplexer has 8 ASI inputs, 2 separate ASI output ports and 1 Gigabit IP output with two separate channel. The bit rate of output stream can be up to 216Mbps.

1.2 Features

- Fully complying with ISO13818 and EN300 468 standard
- Integrated demodulating and multiplexing functions
- 8 ASI (6 tuner and 2 ASI optional)（DVB-C/S/S2/T optional）inputs
- MPEG-2 transport stream re-multiplexing
- SPTS and MPTS code stream multiplexing
- PCR correcting and PID re-mapping
- Two groups of separate TS outputs (each group has 2 channels)
- Two IP outputs (the copies of 2 ASI outputs)
- PSI/SI editing
- Huge buffer memory for saving the overflowing code stream
- Supporting to multiplex one program to all outputs
- Alarming function
- Network long-distance upgraded
- With high reliability design and stability operation
- Full keyboard operation and LCD display

l Network management system

1.3 Specifications

Input interface	ASI	8 ASI (6 tuner and 2 ASI optional) inputs (DVB/C/S/S2/T optional) (Up to 214Mbps per channel)
Re-multiplex		MPEG-2 TS re-multiplex
		PID re-mapping (auto/manual optional)
		PCR correction
		Automatic generating PSI/SI table
Input	Packet format	204/188 self-adaption
Output port	ASI	2 groups of separate outputs (each group has 2 channels)
	IP	2 channels of separate IP outputs （share one GE Ethernet port）
PID	Output range	0000—1FFF
	PID transparent	Any PID transparent and mapping achievable
	Amount of output PID per input	256
NMS port	Ethernet port	10/100M
General	Demission	482mm×410mm×44mm
	Weight	6kg
	Temperature	0~45℃(operation) ， -20~80℃(storage)
	Power supply	AC 110V±10%，50/60Hz

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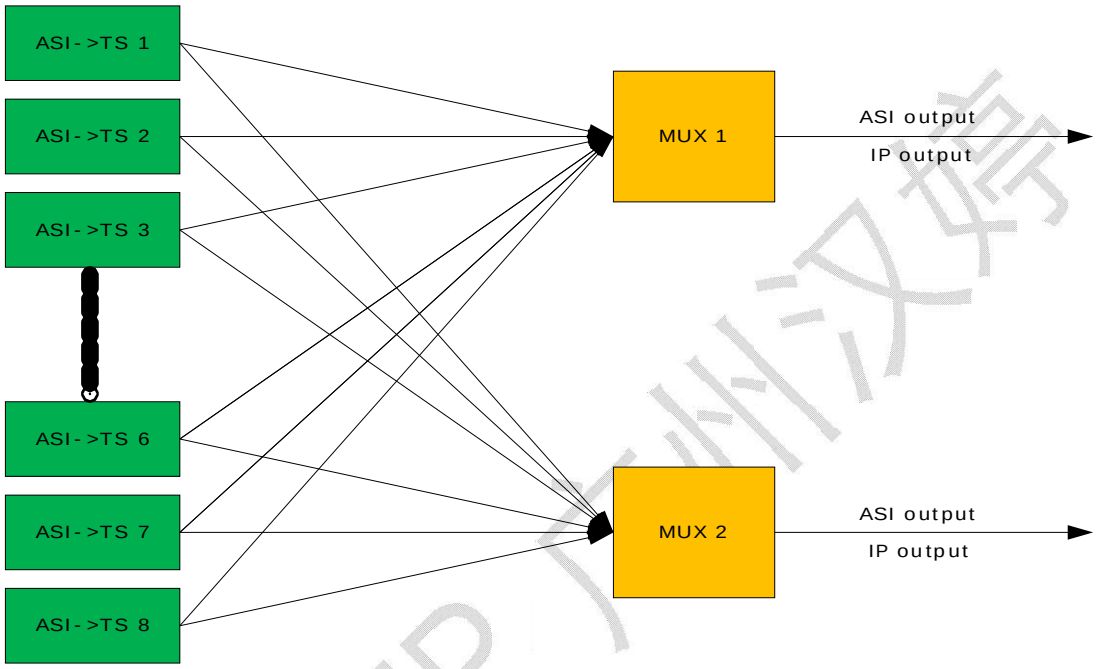
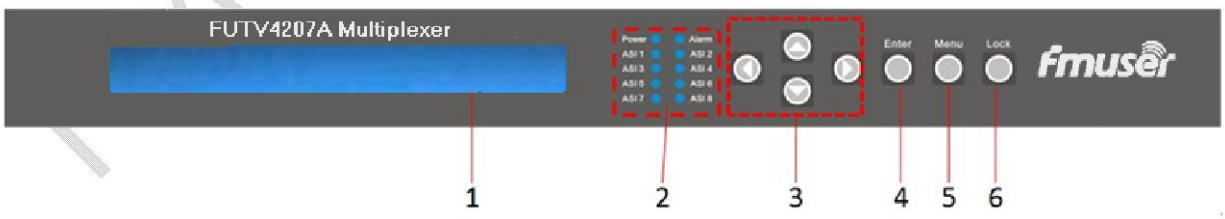
		Or AC 220V±10%，50/60Hz
	Consumption	18W

1.4 Principle Chart



1.5 Appearance and Description

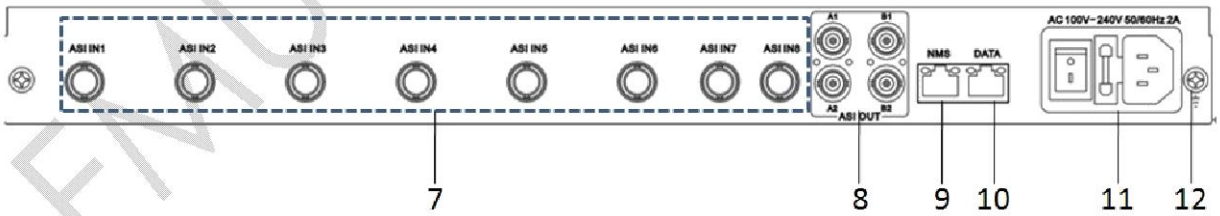
Front panel Illustration:



Indicator area: All the indicators will light on when FUTV4207A multiplexer works at its current mode.

1		LCD Display
2	ASI IN	Power Indicator
		Alarm Indicator
		ASI 1: when the input signal of ASI 1 is locked, the light is green. Otherwise it becomes red.
		ASI 2: same as ASI 1
		ASI 3: same as ASI 1
		ASI 4: same as ASI 1
		ASI 5: same as ASI 1
		ASI 6: same as ASI 1
		ASI 7: same as ASI 1
		ASI 8: same as ASI 1
3		UP/ DOWN /LEFT/RIGHT Key
4		Enter: Confirmation key
5		MENU Key
6		LOCK Key

Rear panel Illustration:



7	ASI In	ASI IN1: TS input of port 1
		ASI IN2: TS input of port 2
		ASI IN3: TS input of port 3
		ASI IN4: TS input of port 4
		ASI IN5: TS input of port 5

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		ASI IN6: TS input of port 6
		ASI IN7: TS input of port 7
		ASI IN8: TS input of port 8
8	ASI OUT	A1: TS output of port A1
		A2: TS output of port A2
		B1: TS output of port B1
		B2: TS output of port B2
9		NMS Ethernet Port (10-100Mbps)
10		Data port: two Gigabits IP outputs port
11		Power switch, fuse, socket
12		Grounding pole

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Chapter 2 Installation Guide

2.1 Acquisition Check

When user opens the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- FUTV4207A ASI input Multiplexer
- User's Manual
- ASI Cable
- Power Cord

If any item is missing or mismatching with the list above, please contact local dealer.

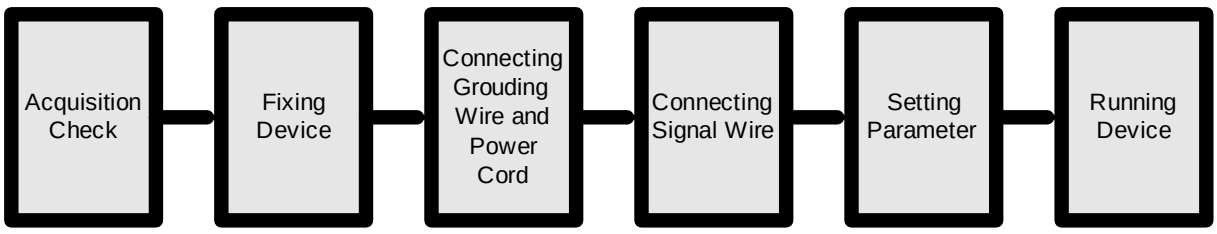
2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter includes:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing multiplexer
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following：



2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1X10^{7}$~$1X10^{10}\Omega$, Grounding current limiting resistance: 1MΩ (Floor bearing should be greater than 450Kg/㎡)
Environment Temperature	5~40℃(sustainable)，0~45℃(short time)， installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 220V 50Hz. Please carefully check before running.

2.2.3 Grounding Requirement

- All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- ASI cable's outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm^2.

2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm^2.

2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order

goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord

  User can insert one end into power supply socket, while insert the other end to AC power.

- Connecting Grounding Wire

  When the device is solely connected to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

F Caution:

Before connecting power cord to FUTV4207A multiplexer, user should set the power switch to "OFF".

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection of output signal cable. The details are as follows:

2.4.1 ASI In and ASI out connection:

- ASI Input Connection

User can find ASI input port on the device according to connector mark described in the rear panel illustration, and then connect the ASI cable (in the accessories). One end is connected to the Multiplexer's ASI input port, while the other end is connected to Encoder's ASI output port or ASI output port of other equipment.

- ASI Output Connection

User can find ASI output port on the device according to connector mark described in the rear panel illustration, and then connect the ASI cable (in the accessories); one end is connected to the Multiplexer's ASI output port and the other end to the Modulator's ASI input port or ASI input of other equipment. Multiplexer's ASI cable illustrated as follows:

2.4.2 Network cable (Category 5) illustration:

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Chapter 3 Operation

FUTV4207A multiplexer's front panel is user operation interface. The detailed operations go as follows:

Keyboard Function Description:

MENU: Canceling presently entered value, resuming previous setting; Return to previous menu.

ENTER: Activating the parameters which need modifications, or confirming the change after modification.

LEFT/RIGHT: To choose and set the parameters.

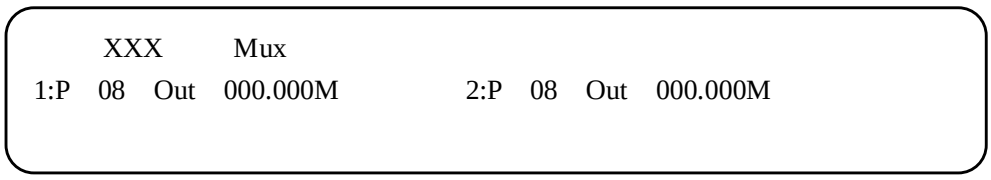
UP/DOWN: Modifying activated parameter or paging up/down when parameter is inactivated.

LOCK: Locking the screen / canceling the lock state. After pressing lock key, the system will question the users to save present setting or not. If not, the LCD will display the current configuration state.

At the page of 5.2 "Load default CFG", user can firstly press "ENTER" key, consequently system resumes factory parameter setting.

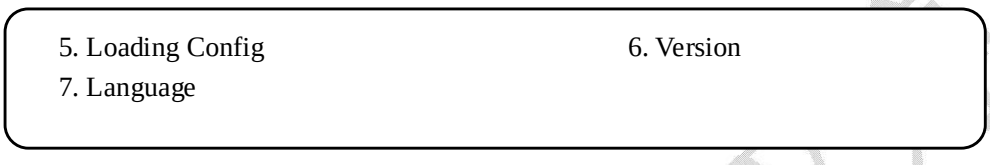
3.1 Main interface

After switching on the multiplexer, the LCD will display the company name and the device name in the first row, while the output program amount and real-time bit-rate of both output Ports are displayed in the second row.



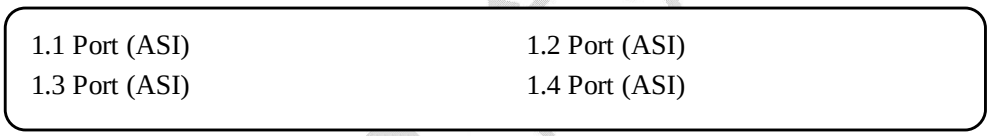
3.2 General setting

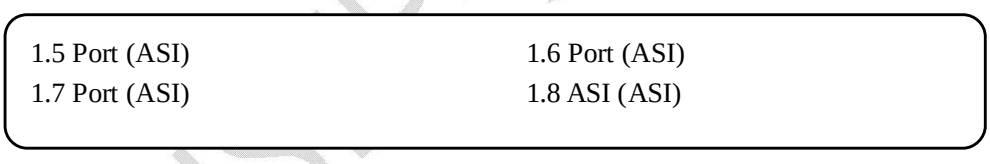
By pressing “LOCK” key to enter the main menu, the LCD will display the following pages:



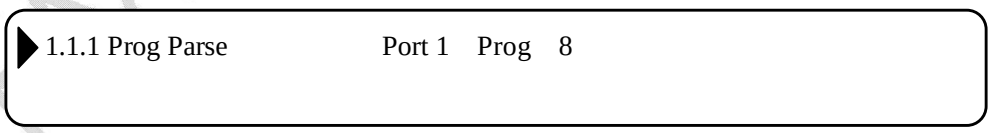
3.2.1 Input Setting

User can press “Enter” key to enter into the menu of input setting.





Here we take port 1.1 port (ASI) as an example:



At the submenu 1.1.1, the first row displays the port number and the quantity of programs, for example, Port 1 means the TS stream comes from port 1 and the “Prog 8” means the quantity of the programs is 8.

The descriptions of rest ports with ASI in are the same.

3.2.2 Output Setting

User can press “enter” key to enter into the menu of output setting.

2.1 Output 1	2.2 Output 2
2.3 UTC Time Confi	

User can set the parameters of ASI and IP output in this submenu.

2.1.1 Output Stream	2.1.2 Trans Stream
2.1.3 Out IP Enable	2.1.4 Out Address

2.1.5 Out Port

3.2.2.1 Output 1

3.2.2.1.1 Output Stream

User can set the total output bit-rate at this menu. The value of this bit-rate includes the following, the effective bit-rate of multiplexed programs from all input ports and the bit-rate of stuffed null pockets.

3.2.2.1.2 TransStream ID

This is a 16-bit field which serves as a label for identification of the out TS. The value ranges from 0 to 0xFFFF.

3.2.2.1.3 Output IP Enable

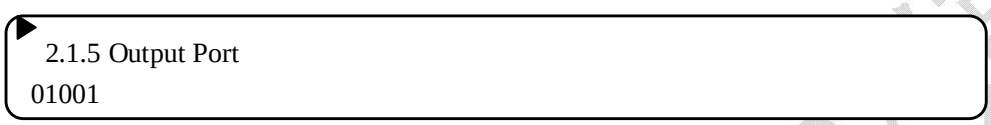
▶ 2.1.3 Out Ip Enable	
Yes	*No

At this submenu, user can decide whether to enable or disable IP output of port A.

3.2.2.1.4 Output Address

User can check and set the IP output address at this submenu.

3.2.2.1.5 Output Port



The description and settings of 2.2 PORT 2 are the same as the 2.1 PORT 1.

3.2.2.3 UTC Time Config

User can set the UTC time (Coordinated Universal Time) at this submenu.

3.2.3 Network Setting

3.4 Console Address
224.002.002.002

3.5 MAC Address
ffffffffffff

3.6 NMS Port
02007

3.2.3.1 10/100M IP setting

The 10/100Mbps Network port is for NMS controlling only. User can set the device's NMS networking parameters in the series of submenus.

Note: The MAC address is according to the factory setting, and it's unique.

3.2.3.6 NMS Port

This port can be used as communication port for NMS management.

3.2.4 Saving Config

User can choose NO or YES to save the current configuration parameters at this menu.

4.1 Saving Config
▶Yes * No

Saving, please wait:
>>>>>>>>>>>>>>>

3.2.5 Loading Config

5.1 Load Saved CFG 5.2 Load Default CFG

```
Loading, please wait:
>>>>>>>>>>>>>>>>
```

User can restore the device into the last saved configuration by choosing the menu 5.1 “Load Saved CFG”, and also user can restore the device into factory configuration by choosing the menu 5.2 “Load Default CFG”.

3.2.6 Version

User can check the device’s hardware version and software version at this submenu:

```
                XXX Electric
SW 1.23                 HW 1.7
```

3.2.7 Language

User can select the needed language at this submenu:

```
*ENGLISH
 中文
```

Chapter 4 SNMP Management

SNMP (Simple Network Management Protocol) Management System is applied to digital TV equipment operation, control and management and parameters setting, etc. It centralizes digital TV equipment through network.

4.1 Installation

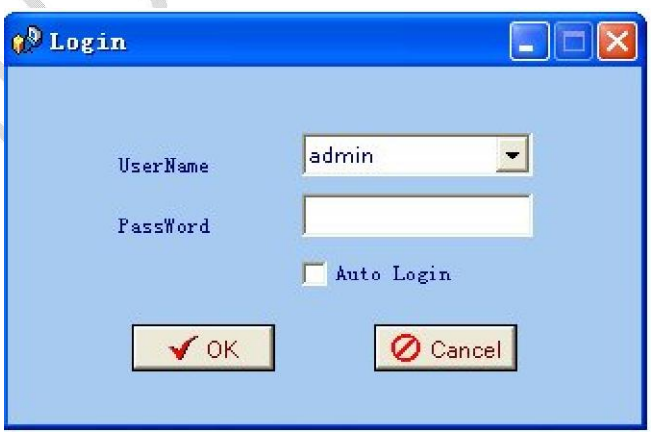
The software doesn't need special installation. User can just double-click

to run this application program.

4.2 Software Operation

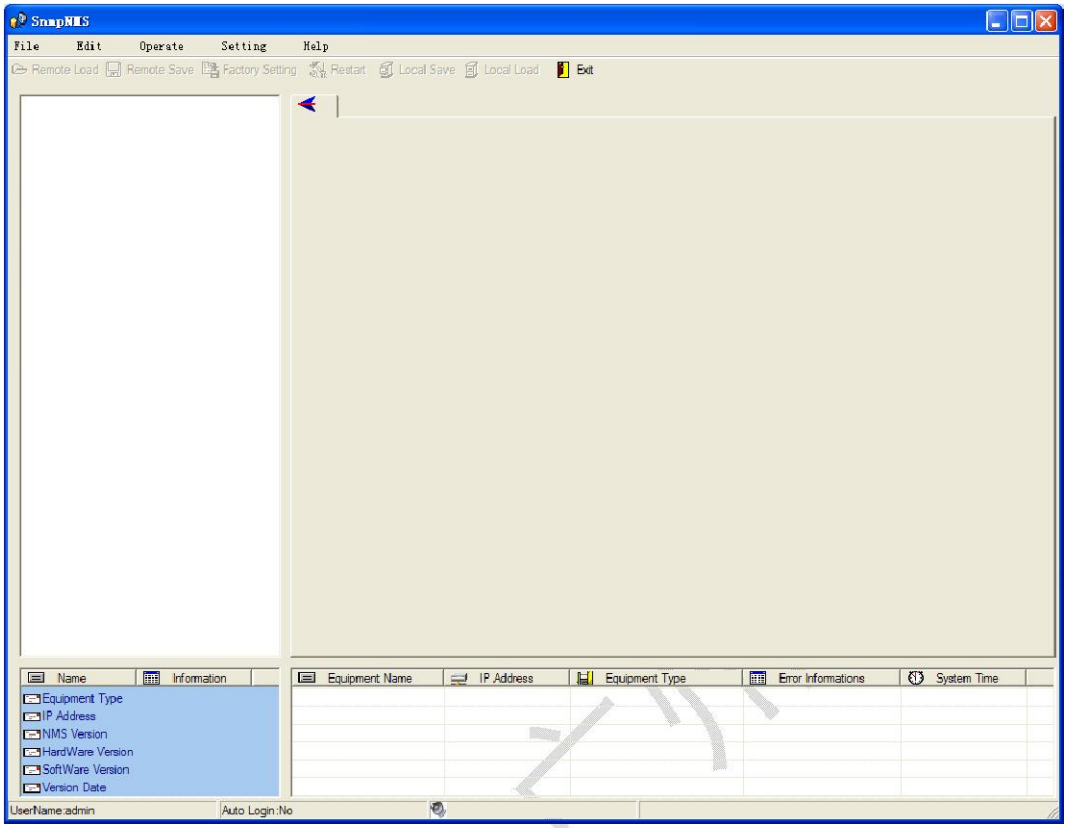
4.2.1 Login Interface

A login interface will pop up firstly when the software is running and give user prompts to input user name and password (The default user name is **admin** and no password. User can add users and passwords as needed. Details please refer to 4.4.3 in 4.4 Other Settings.). The menu shows as follows:



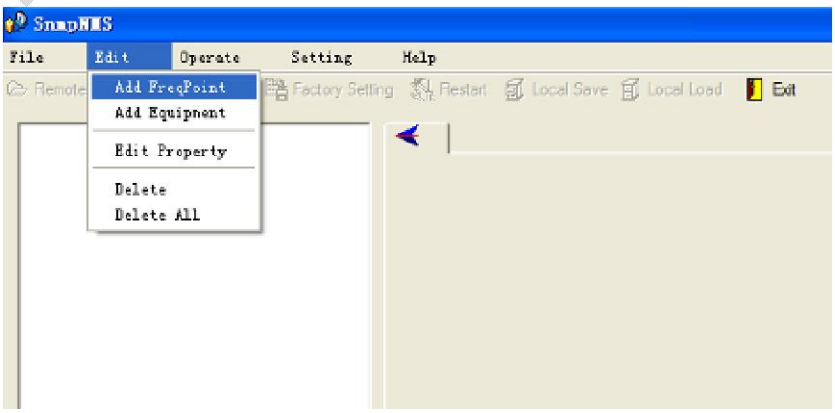
User can login the main interface by pressing **OK** key after inputting user name. The software will verify them with database record automatically and the main interface will appear.

4.2.2 Main Interface



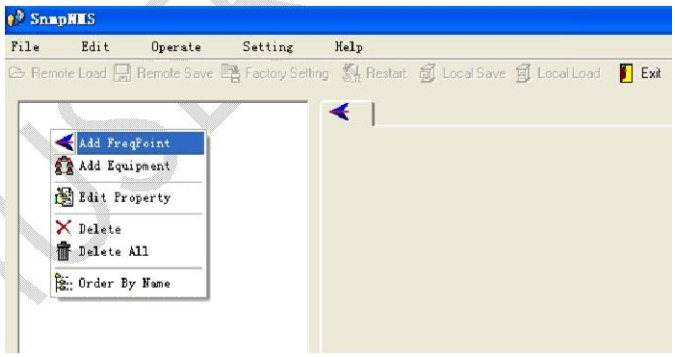
User can create a device node tree in the left column by adding, modifying and deleting the device node. This software provides a powerful node operation function, and the user can edit various parameters in the device tree for management and classification.

4.2.3 Adding Frequency Point



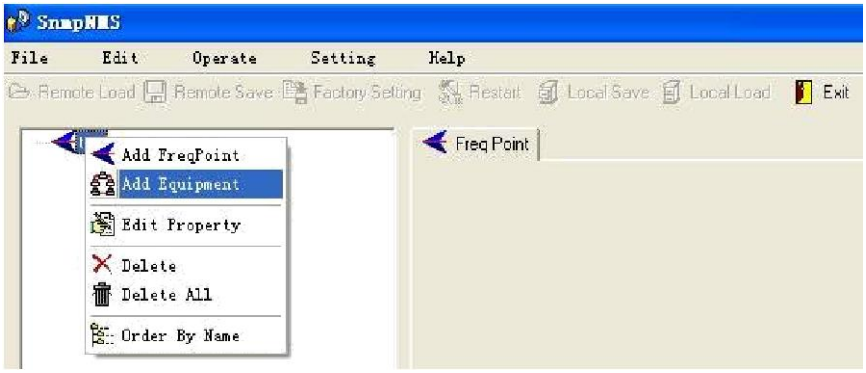
The Add Freq Point dialog box popes up when the user clicks the Add Freq Point item in the Edit pull down menu on the menu row. The device will confirm the given frequency while user clicks OK.

User can also click right mouse key to pop up the short-cut menu in device tree or in the left blank column, then the corresponding dialog box will pop up by choosing **Add Main Freq Point.** The device will confirm the given frequency while user clicks **OK.**

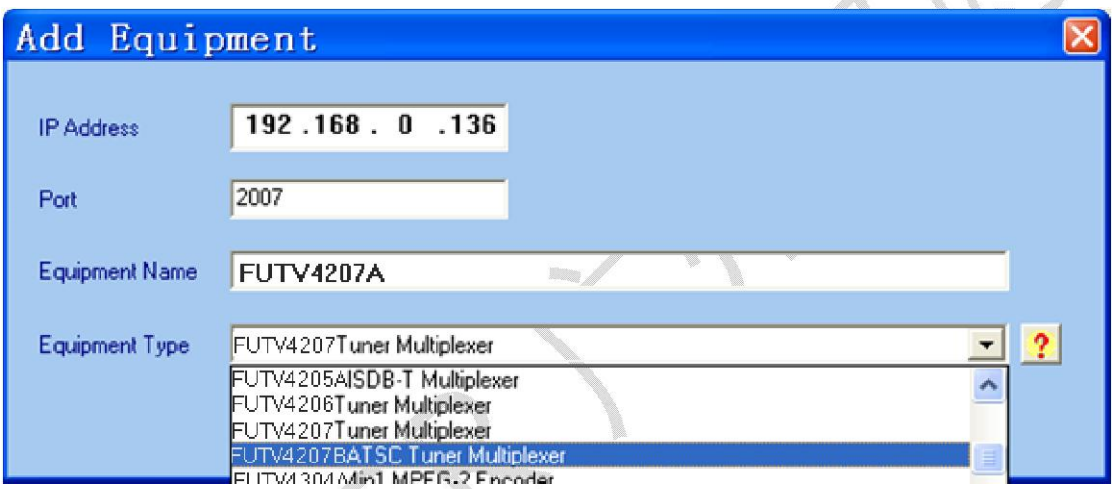


4.2.4 Adding Equipment under Given Frequency Point

User should choose the frequency point in advance, and then the dialog box of *Add Equipment* will pop up when user clicks “Add Equipment” item in the Edit pull down menu on the menu row.



4.2.5 Edit Equipment Interface



User should follow the steps as below:

- Inputting the device IP Address
- Inputting the port
- Inputting the Equipment Name
- Choosing the connected equipment type in drop down list of “Equipment Type” by clicking the “▼” Or Click “?” to auto search the type of device

NOTE:

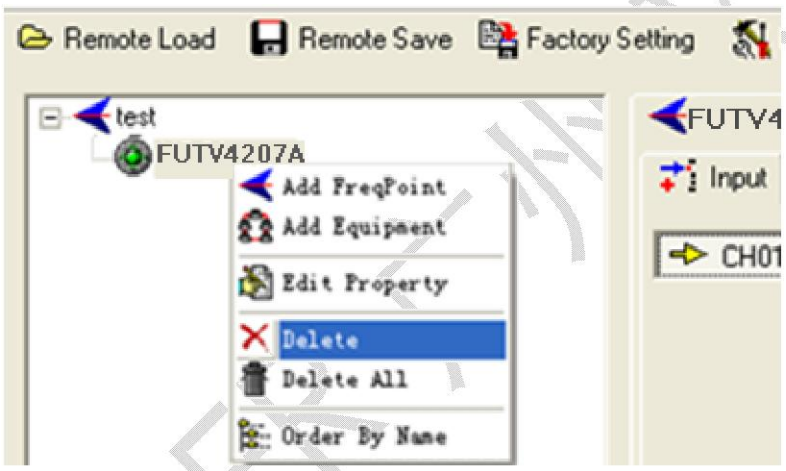
1. The default IP of FUTV4207A is 192.168.0.136, also you can check its IP address in the front panel of device in case the IP changed unexpected.

2. The PC IP address and device IP address should be in the same network.

For example the Device IP is 192.168.0.136, sub mask is 255.255.255.0. So the PC IP address should be 192.168.0.X (1<X<255), sub mask is 255.255.255.0. User can use ping command to confirm these two are in same network or not.

4.2.6 Delete Equipment

User can choose the equipment to be deleted in the left column, and then click the “delete” item in the drop down menu which appears by clicking the right mouse key.



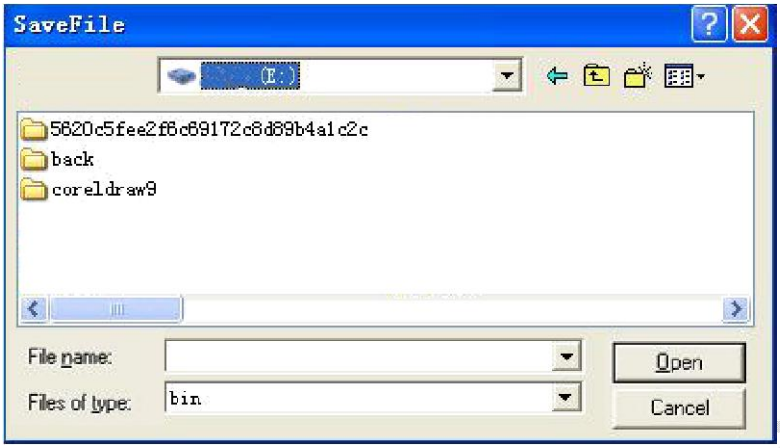
4.2.7 Save Configuration

After finishing all the parameters setting, user can click

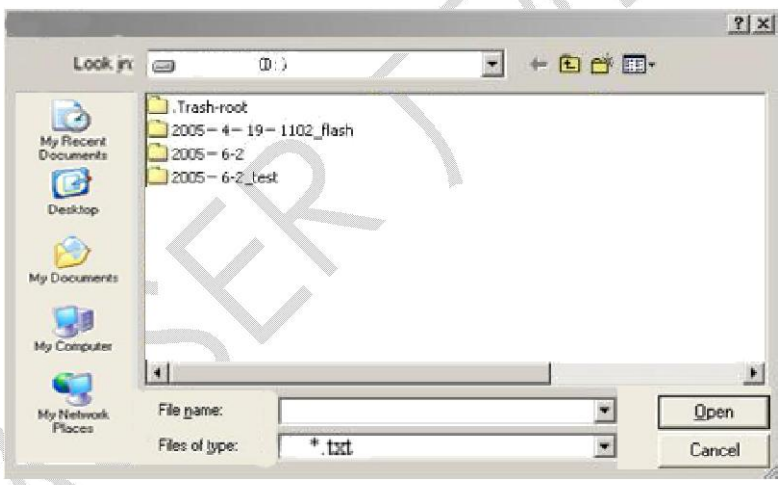
button on the toolbar to save the modifications to the device’s flash, while user can also reload the saved parameters from device’s flash and refresh the device’s parameters setting according to the loaded values by clicking

Alternatively, user can also click the

button on the toolbar to popup the “save file” dialog box, which gives prompts to save all the device’s parameters as binary files in the computer’s hard disk.



Similarly, user can choose to click the Local Load button on the toolbar to popup the read file dialog box, to read the stored binary file and set the device's parameters according to the loaded binary files.



4.3 FUTV4207A Multiplexer Operation

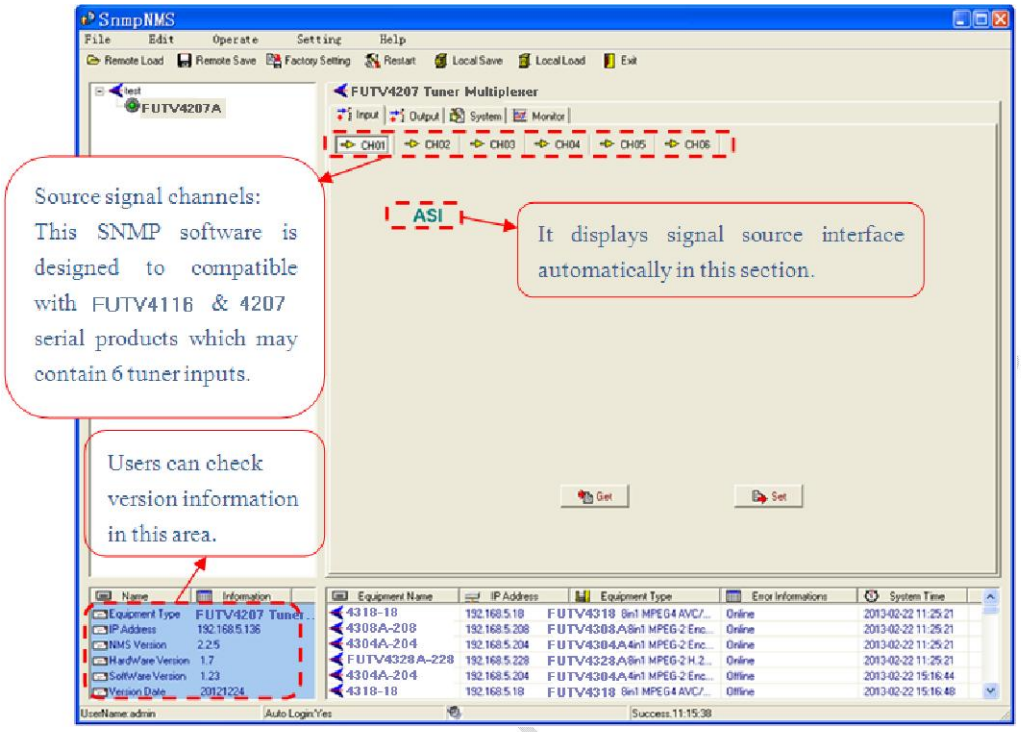
User can choose the Tuner Input Multiplexer in the device tree;

Set: making the current parameters, which shows in the NMS software, activate.

Get: reading the current device's activating parameters and showing them on NMS software.

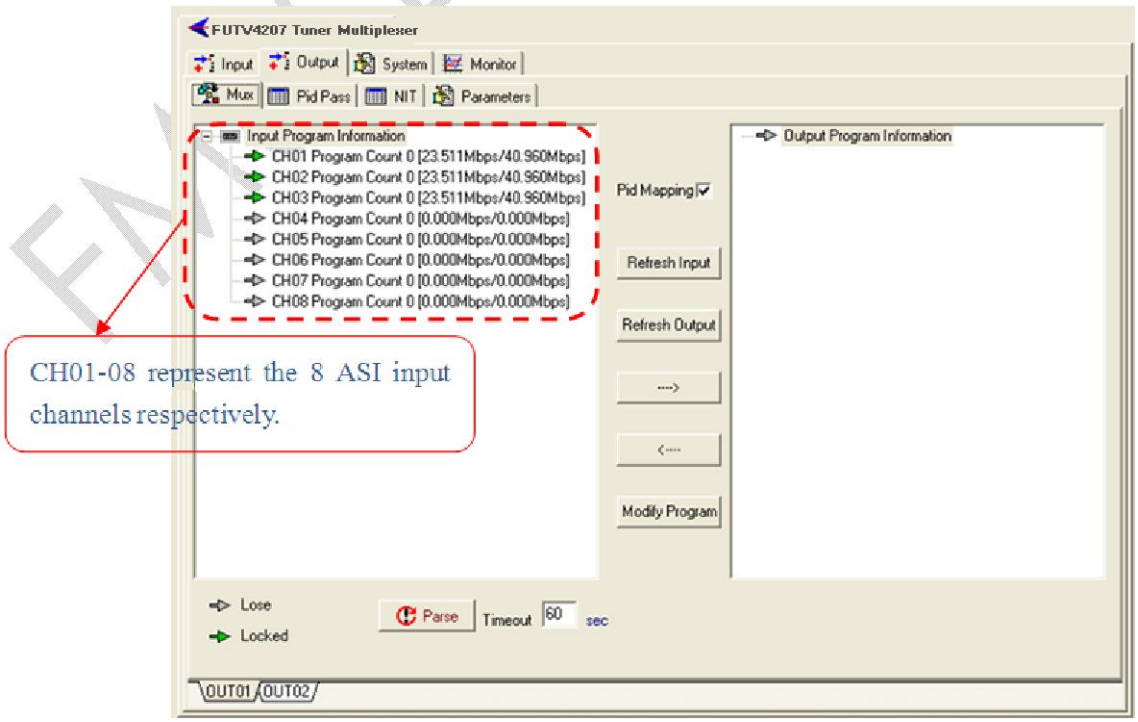
4.3.1 Input

FUTV4207A has 8 ASI inputs

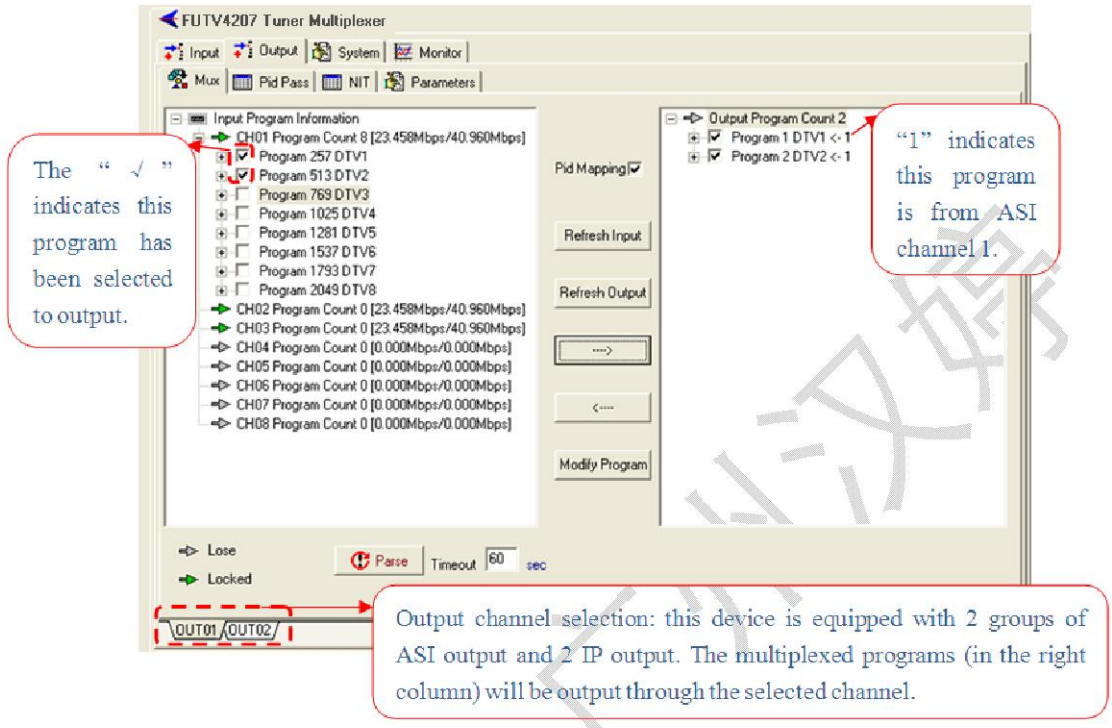

Source signal channels: This SNMP software is designed to compatible with FUTV4116 & 4207 serial products which may contain 6 tuner inputs.
ASI
It displays signal source interface automatically in this section.
Users can check version information in this area.

4.3.2 Output Setting

4.3.2.1 Mux (Multiplex)



Choose one channel (with TS locked, marked by green arrow Locked) and click Parse to parse the input programs.



The programs in the left column represent all input programs and the port they come from. The programs in the right column represent the output programs and the input channel they are from. User can analyze the programs of each input port and multiplex those programs to the output Port 1 or Port 2, or both port 1 and Port 2. Moreover, user can modify the output programs' Program Name, PMT, PCR, video, audio PID.

Pid Mapping : Check this box the set the PID Mapping

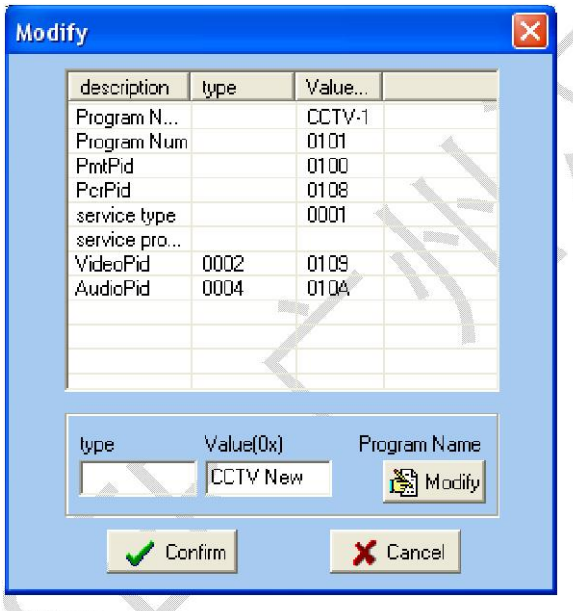
Refresh Input : To refresh the inputting terminal and get the inputting information

Refresh Out : To refresh the outputting terminal and get the outputting information

: To multiplex the input programs to the output channels after selecting (clicking) the target program.

: Cancel the multiplexed programs.

: To modify the output programs' Program Name, PMT, PCR, video, or audio PID as needed. To modify program information, user can select the target program in output part first and click this button to pop up a dialog box as below:

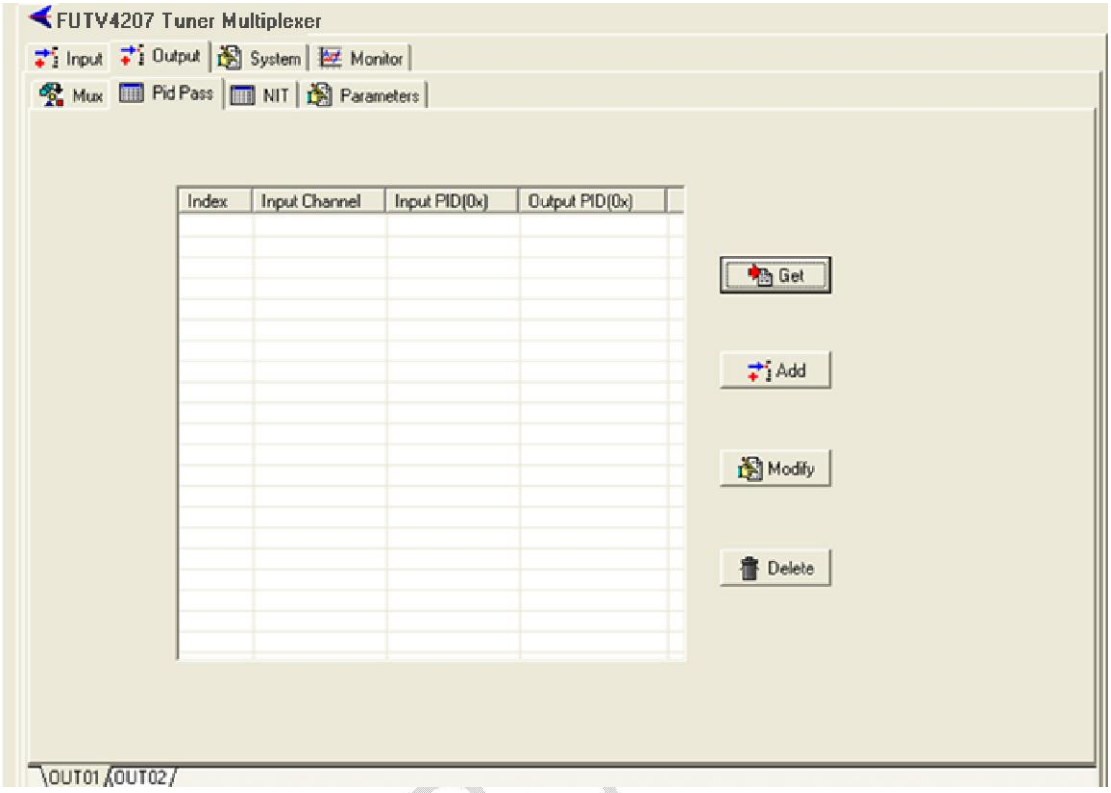


Select the target item and input the new value in the box below, then click and to effect the modification.

: The parsing overtime value

The programs of input TS may be very complicated and it takes very long time for device to analyze. Sometimes, it may take a short-time. The "Time Out" field decides what time the device will give up if the analyzing is not finished yet.

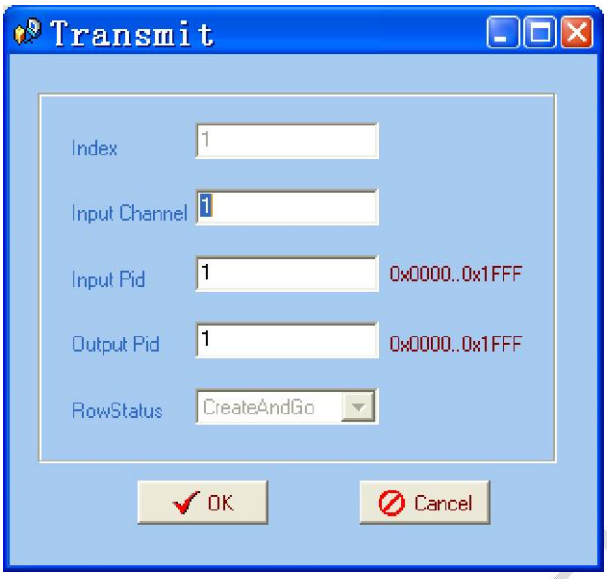
4.3.2.2 PID Pass



User can decide to bypass the inputting PID as needed in this interface.

In some occasions, there are some PIDs which won't belong to any program, such as EPG, NIT tables, and so on, but user just wants to pass them through the multiplexing module without changing anything. This is the main purpose of this function.

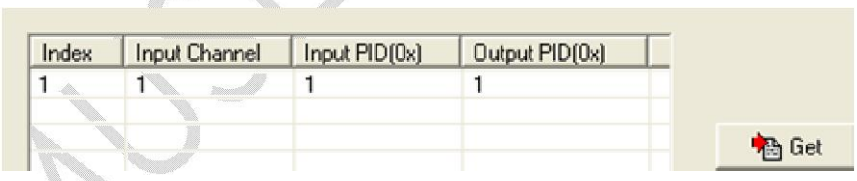
The display will show as below when user clicks "Add" button.



Input PID and Output PID

The Old (Input) PID is the PID number in the TS from given Port. The correspondent New (output) PID number could be same as input PID number while it could be different if a PID remapping is needed.

Modify the data as needed and click OK to confirm. The PID then will be bypassed and listed in the table as below.



Other functions:

User can also modify or delete the added PID through the corresponding buttons at right.

User can click the selected PID and then click “delete” button to delete a transparent pass PID from the “PID Pass”.

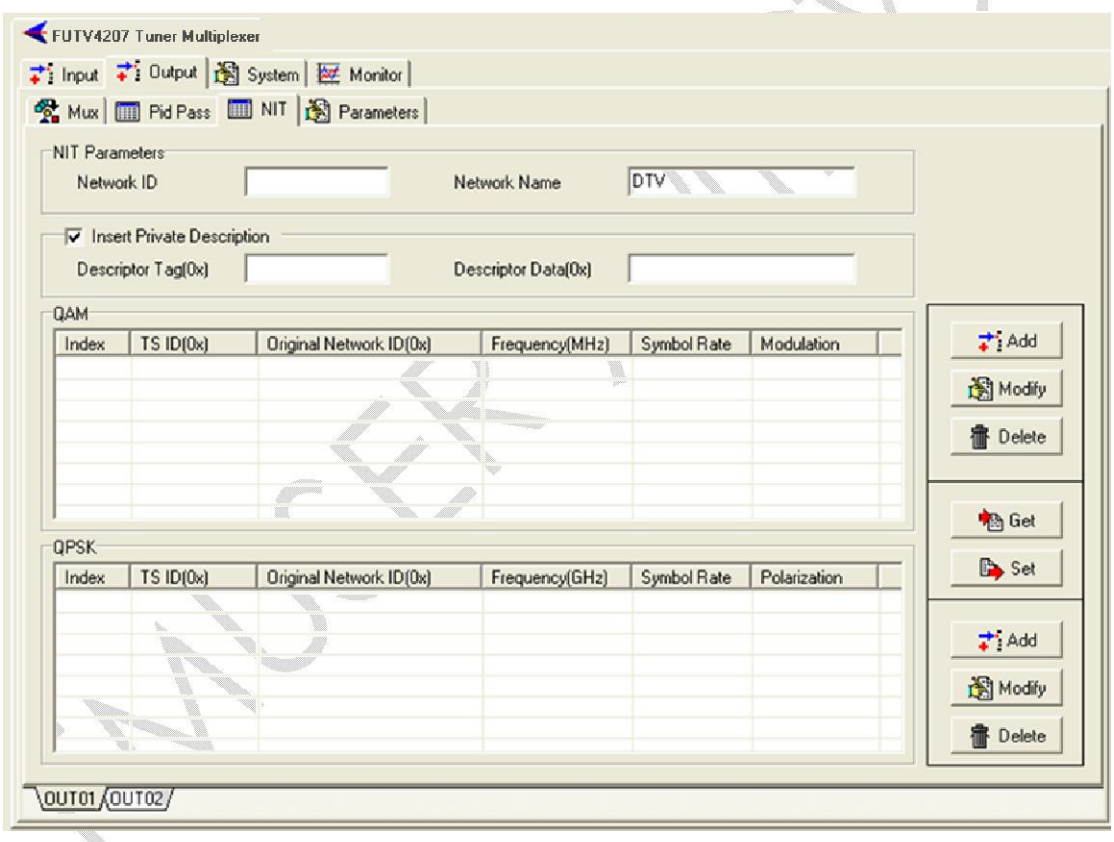
User can click the selected PID and then click “modify” button to modify a transparent pass PID’s information in the “PID Pass”.

To read the “PID Pass” from device

4.3.2.3 NIT Insertion

NIT: Network Information Table.

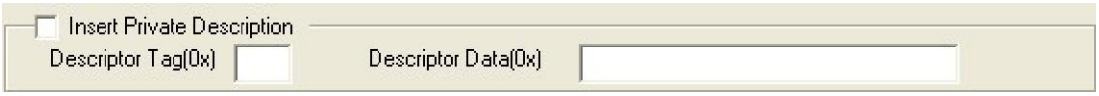
NIT table is a very important table for describing the network and TS. Users can set the parameters of the output NIT table.



Network ID：The parameter describes the output TS’s network ID

Network Name：The parameter describes the output TS’s network name.

Insertion private description

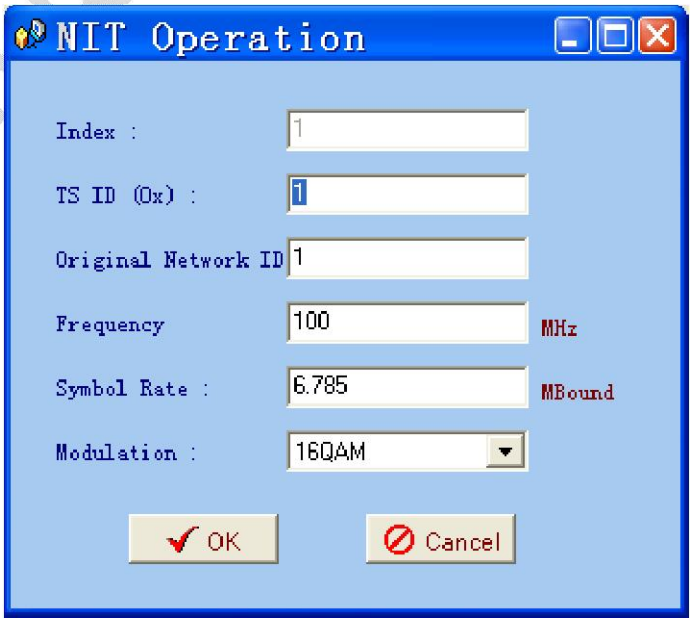


Insert Private Description：This checkbox will allow user to insert the private descriptor into the output TS. The private descriptor includes two parts. One is descriptor tag, and the other is descriptor information.

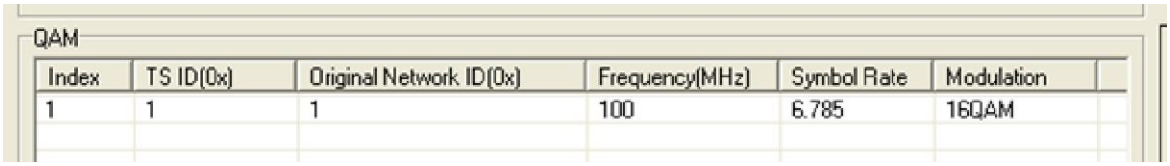
Descriptor Tag(0x)：The Descriptor Tag is an 8-bit field which identifies each descriptor.

Descriptor Data(0x)：The Descriptor Data is the detailed information of the private description.

:Users can add the cable transmission descriptor in this Add button, and it will pop up the following dialogue box, say, the added descriptor is apply for the DVB-C network.



The interface will show as below after the NIT parameters being added：

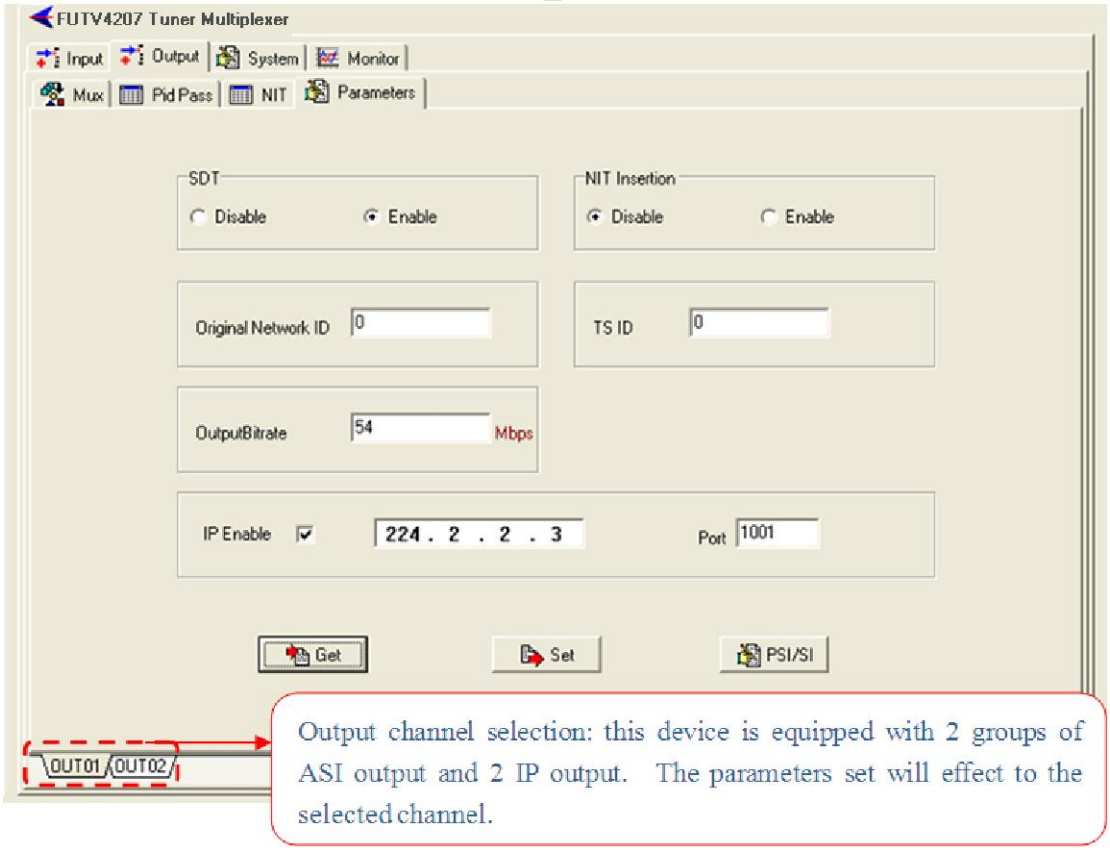


Modify ：The “Modify” button will trigger a modify window and allow user to modify the selected items in the NIT.

Delete ：The “Delete” button will remove the selected items in the NIT.

Set ：The set “Button” will send the NIT to the chosen output Port

4.3.2.4 Output Parameters Setting



SDT Insertion

User can decide whether to insert the SDT table in the output TS at this field.

NIT Insertion

User can decide whether to insert the NIT table in the output TS at this field.

Original Network ID

To set the original network ID from 0 to 0xFFFF

TS ID

User can set a 16-bit TS ID at this field which serves as a label for identification of the out TS. The value ranges from 0 to 0xFFFF.

(Total) Output Bit-rate

User can set the total output bit-rate at this field. The value of this bit-rate includes the following, the effective bit-rate of multiplexed programs from all input ports and the bit-rate of stuffed null pockets.

IP Enable

User can decide whether to enable or disable the IP output at this filed.

Out IP address

User can set the output IP address at this field.

Output Port

User can set the IP output port here.

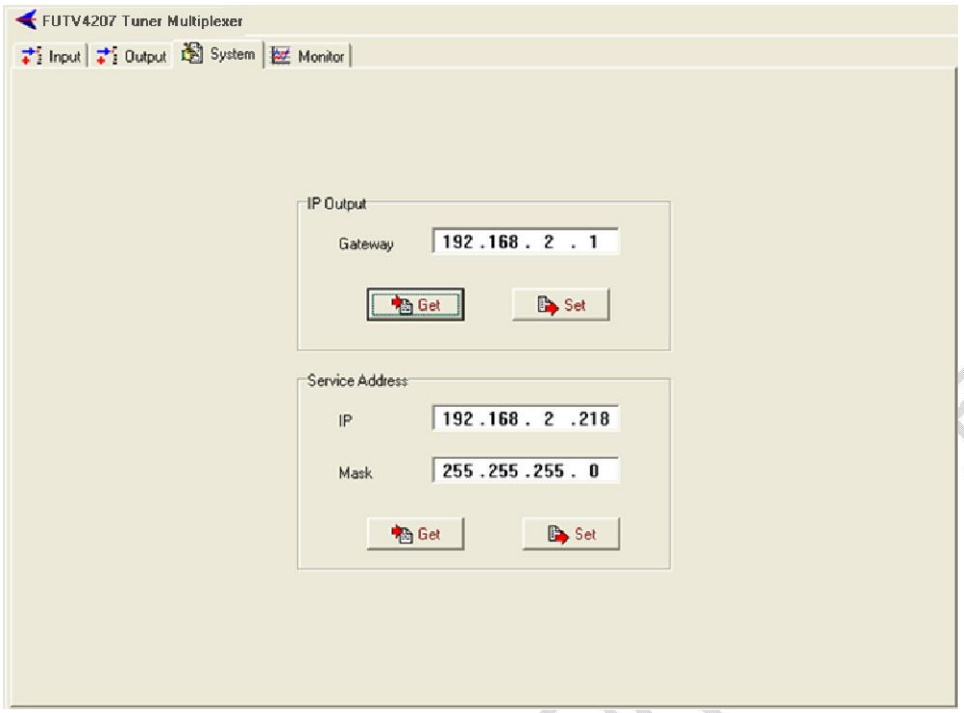
PSI/SI Editor

This button will trigger the PSI/SI Editor for some users' advanced usage. For more detail, please refer to the manual of PSI/SI.

PSI: Program Specific Information

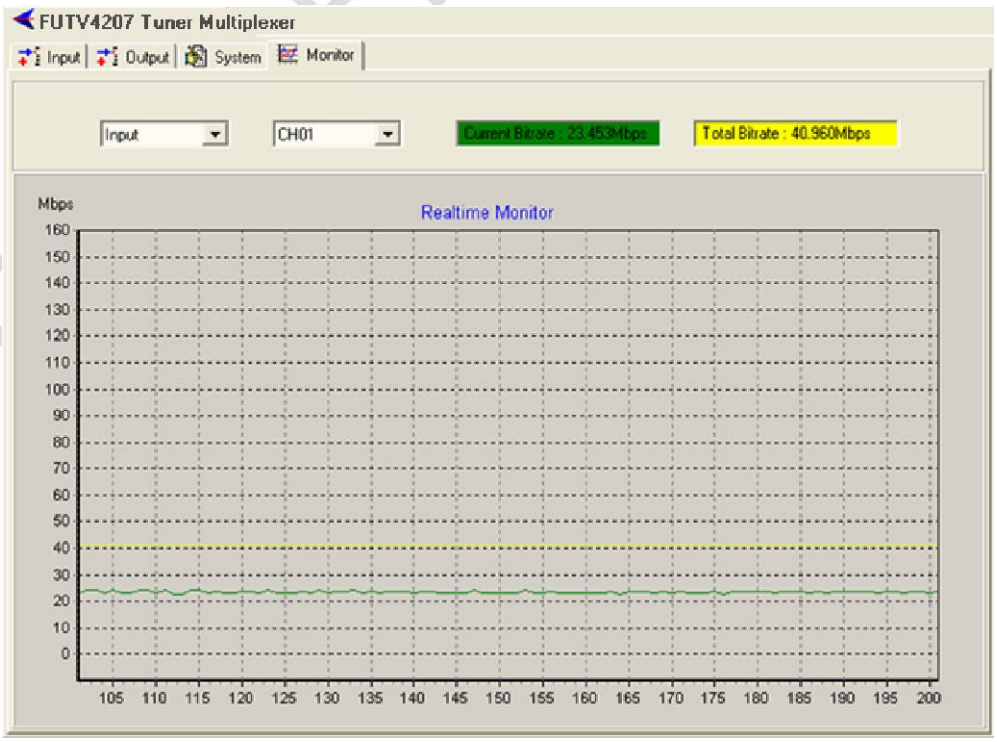
SI: Service Information

4.3.3 System



User can set the output IP gateway address and Service IP/Mask address in this tag. Click Set and then Get to make it effective.

4.3.4 Real-time Monitor



The real-time effective bit-rate of output stream will be directly displayed at this chart. User can also clearly observe the output stream real-time effective bit-rate changing on the following dynamic trend chart.

Current Bit-rate (Green line)

This field indicates the output TS's real-time effective bit-rate of corresponding channel.

Total Bit-rate (Yellow line)

This field indicates the maximum bit-rate of corresponding channel whose real-time output effective bit-rate ever reached.

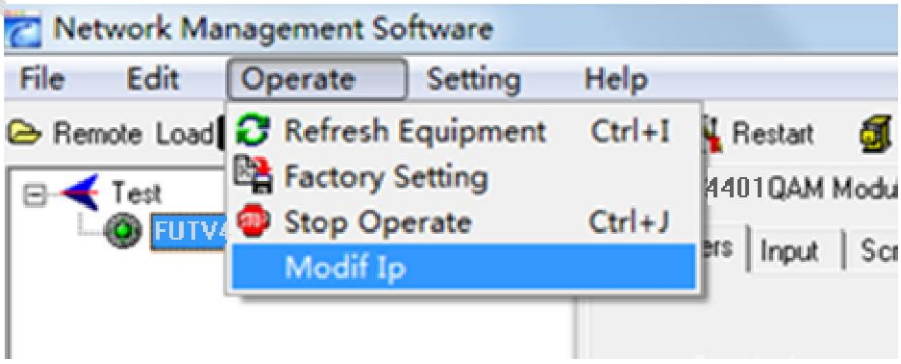
4.4 Other Settings

4.4.1 Difference between Set and Remote Save

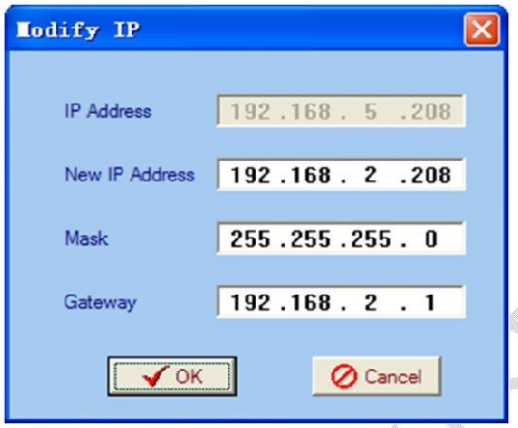
In many cases during the configuration of parameters in NMS, users save the modified configuration by clicking "Set", in which way the configuration can only be saved temporarily and will restore the last saved configuration if the device reboots. To save the configuration permanently, it is required to operate through "Remote Save" on the toolbar explained in 4.2.7.

This is the difference between "Set" and "Remote Save".

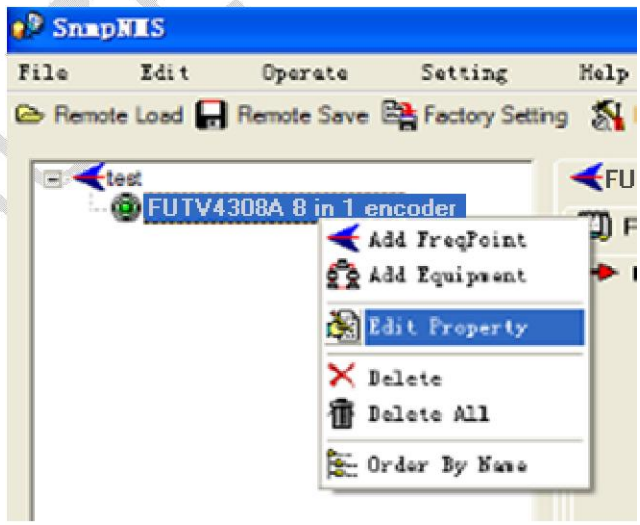
4.4.2 IP Modification



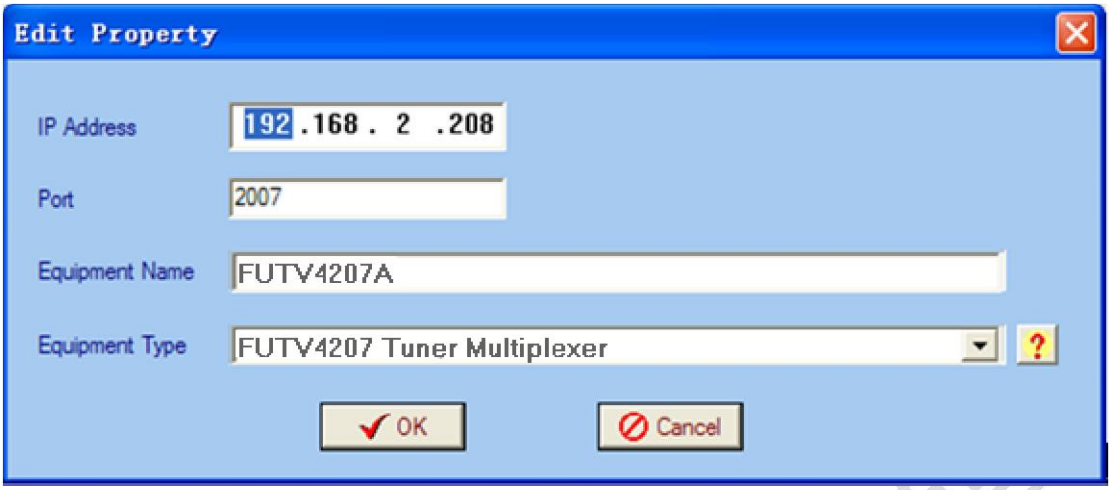
Users can click **Operate** and select **Modify IP** in the drop-down list, and a dialog box presents itself as shown below. Users input the new NMS IP Address for the device and click OK button to confirm.



Users can then note the indicator light turns red, which signifies the equipment has disconnected. Users then can refer to below prompts to edit the property by inputting the new IP to re-connect the equipment.



Input the new IP Address in the box and click OK button, then the device will be connected again.

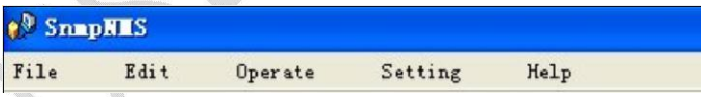


After finishing all the parameters setting, user should click

button on the toolbar to save the modifications to the device's flash.

4.4.3 User Add

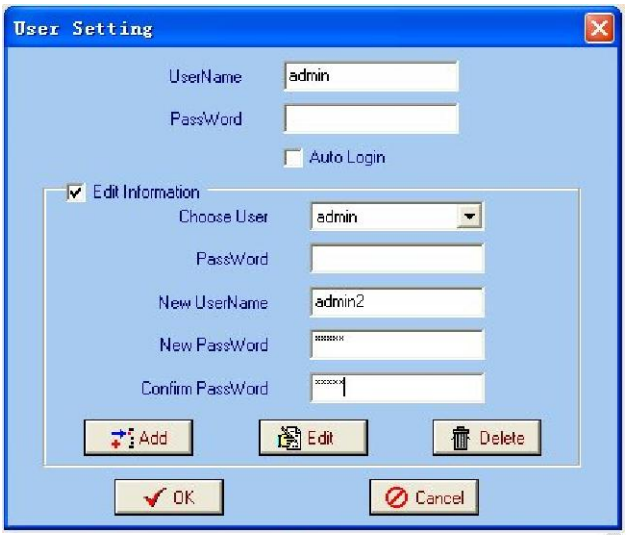
When logging in, user will note that the default user name is **admin** and no password. User can add users and passwords as needed.



User clicking "Setting" in the menu bar and selecting "User Setting" in the pull-down list, the below dialog box will pop out as shown below. Select the "Edit Information" by marking the check box with "√", user can input the new username and new password as prompts below. It is required to click

to add the new user and then click

to save the new setting.


User Setting
UserName
admin
PassWord
Auto Login
Edit Information
Choose User
admin
PassWord
New UserName
admin2
New PassWord
Confirm PassWord
Add
Edit
Delete
OK
Cancel

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Chapter 5 Trouble Shooting

FMUSER's ISO9001 quality assurance system has been approved by CQC organization. For guaranteeing the products' quality, reliability and stability, all FMUSER products pass the testing and inspection before products are shipped out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by FMUSER. To prevent potential hazard, please strictly follow the operation conditions.

Preventive Measures

- Installing the device at the place in which environment temperature is between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must be greater than 10 seconds.

Conditions need to unplug the power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work

properly.

- Maintenance needed

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Chapter 6 Packing list

- FUTV4207A ASI Input Multiplexer 1pcs
- User Manual 1pcs
- ASI Cable 8pcs
- Power Cord 1pcs

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